I 49.89:82/47.1/map E6

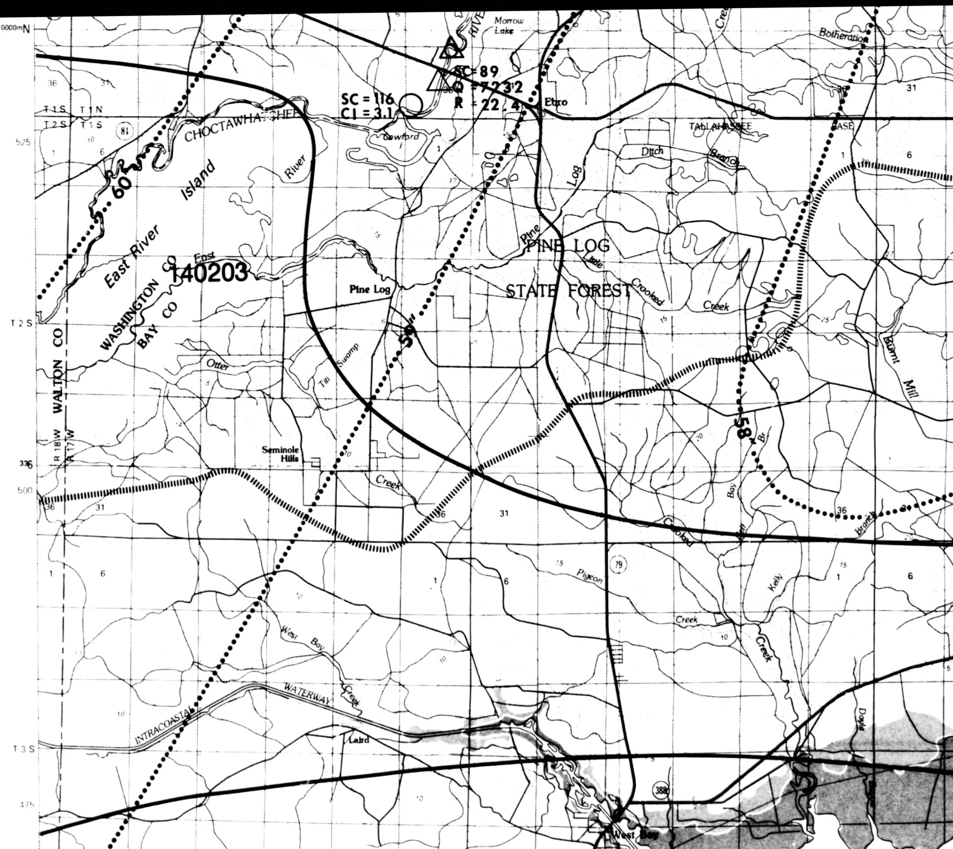
MAP E6

Panama City

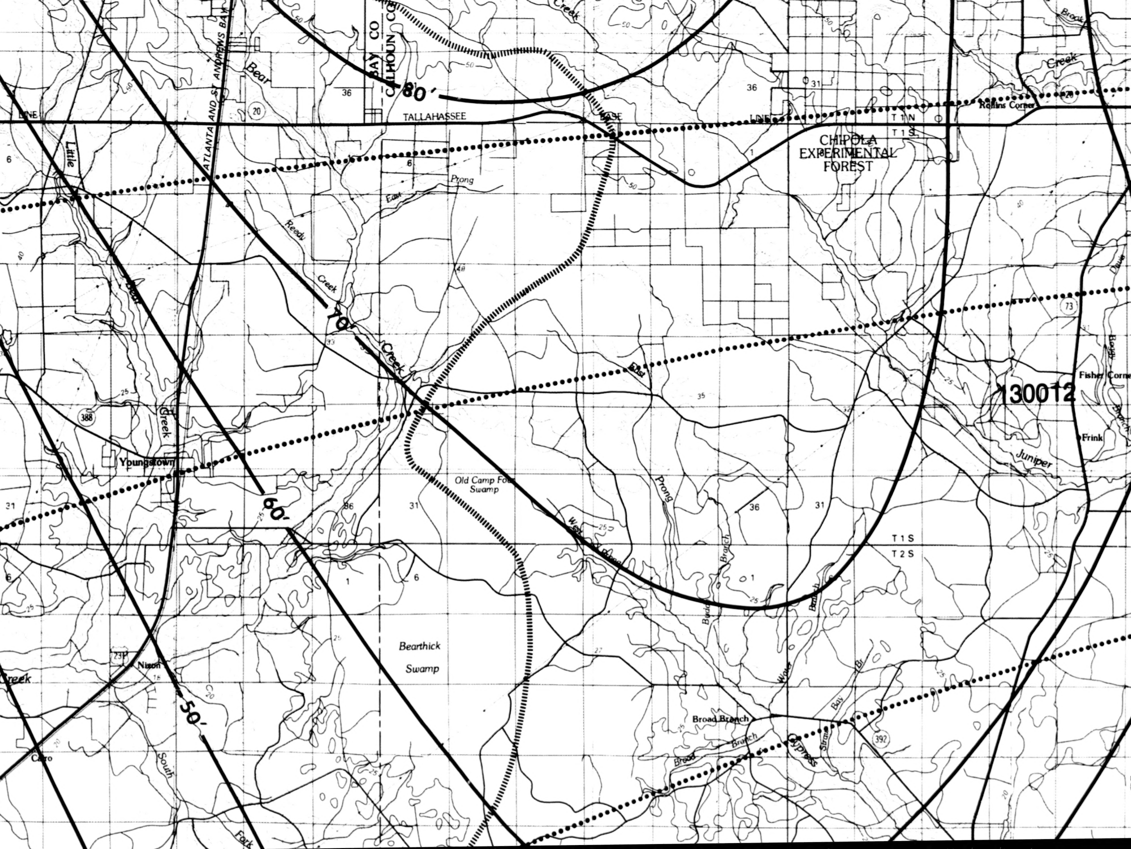
FLORIDA ECOLOGICAL ATLAS

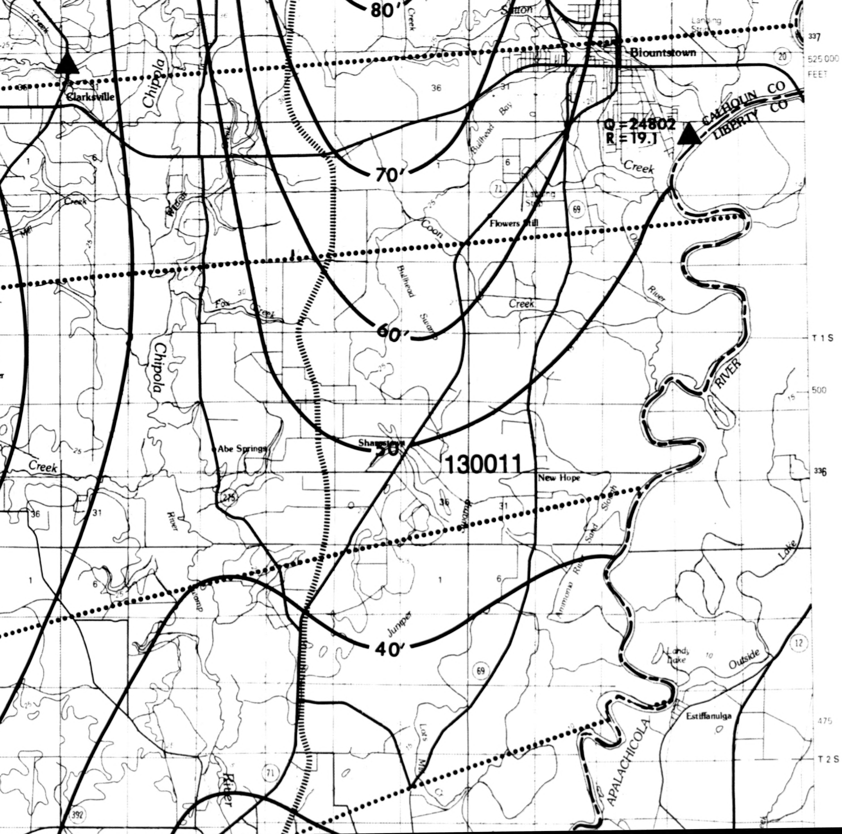
HYDROLOGY AND CLIMATOLOGY

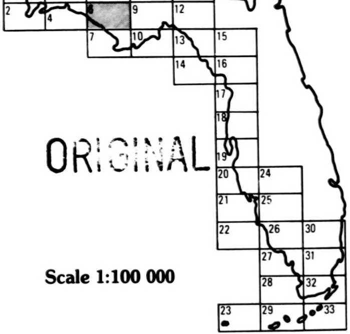
MMS 85-0011
FWS/OBS-82/47.1


0000mN
Morrow Lake
RIVER
Cree
Botheration
SC=89
Q =723.2
R = 22.4
SC = 116
CI = 3.1
Etro
T1S T1N
T2S T1S
81
525
CHOCTAWHATCHEE
Cowford
TALLAHASSEE
BASE
Ditch
Branch
River
Island
60
East River
Log
Pine
PINE LOG
STATE FOREST
Little
Crooked
Creek
WASHINGTON CO
BAY CO
East
140203
Pine Log
T2S
WALTON CO
Otter
Titi
Swamp
59
58
Burnt
Mill
R 18 W
R 17 W
Seminole Hills
Creek
336
500
Crooked
Bay
Br
Branch
Pigeon
Creek
79
Kelly
Creek
West
Bay
Creek
WATERWAY
INTRACOASTAL
Laird
T3S
475
388
West Bay
Doyle
36
31
1
6

Compass Lake
Crystal Lake
Piney Lake
Sand Pond
Rattlesnake Lake
Lake
Sewell Lake
WASHINGTON
BAY
57"
Crystal Lake
Creek
WASHINGTON CO
BAY CO
LINE
BASE
T1N
T1S
Little Porter Lake
River Lake
Tank Pond
Rattlesnake Lake
Court Martial Lake
Black Pond
Little Island Lake
Big Island Lake
Little Blue Lake
Wolf Pond
140101
Econfina
Branch
Little Moccasin
White Western Lake
Bear Lake
Noah Br
58"
Mill Branch
Econfina
Moccasin
Creek
Bennett
Merial Lake
SC = 93
Q = 535
R = 59.54
Creek
Big Cedar
Creek
Long Branch
Creek
Creek
T1S
T2S
Mill
388
Creek
Juniper
59"
Bear
Vicksburg
388
Burnt
Resota Beach
Bayhead
Bayou
Lake
Clear
Creek
Graze Pt
Cedar Pt
R 15 W
R 14 W
Southport


BAY CO
CALHOUN CO
ATLANTA AND ST ANDREWS BAY
Bear
Creek
80′
70′
60′
50′
TALLAHASSEE
BASE
LINE
LINE
T 1 N
T 1 S
T 1 S
T 2 S
Rollins Corner
CHIPOLA
EXPERIMENTAL
FOREST
Little
Reedy
Creek
East
Prong
130012
Fisher Corner
Frink
Juniper
Boggy
Branch
Youngstown
388
20
73
231
392
Old Camp Four
Swamp
West
Bearthick
Swamp
Nixon
Caro
South
Fork
Broad Branch
Broad
Branch
Cypress
Bay
Br
36
31
6
1
35
33
50
40
25
20


80′
70′
60′
50′
40′
Q =24802
R =19.1
130011
Blountstown
Clarksville
Sutton
Landing Strip
CALHOUN CO
LIBERTY CO
525 000
FEET
337
336
T 1 S
500
475
T 2 S
Chipola
Chipola
River
Creek
Bullhead Bay
Bullhead Swamp
Coon Creek
Flowers Still
Fox Creek
Abe Springs
New Hope
Sand Slough
Ammonia River
Juniper
Lake
Landy Lake
Outside
Estiffanulga
APALACHICOLA
RIVER
Old River
20
71
69
275
392
12


2
4
8
9
12
7
10
13
15
14
16
17
18
19
20
24
21
25
22
26
30
27
31
28
32
23
29
33

ORIGINAL

Scale 1:100 000

TOPICAL MAPS IN THIS ATLAS:

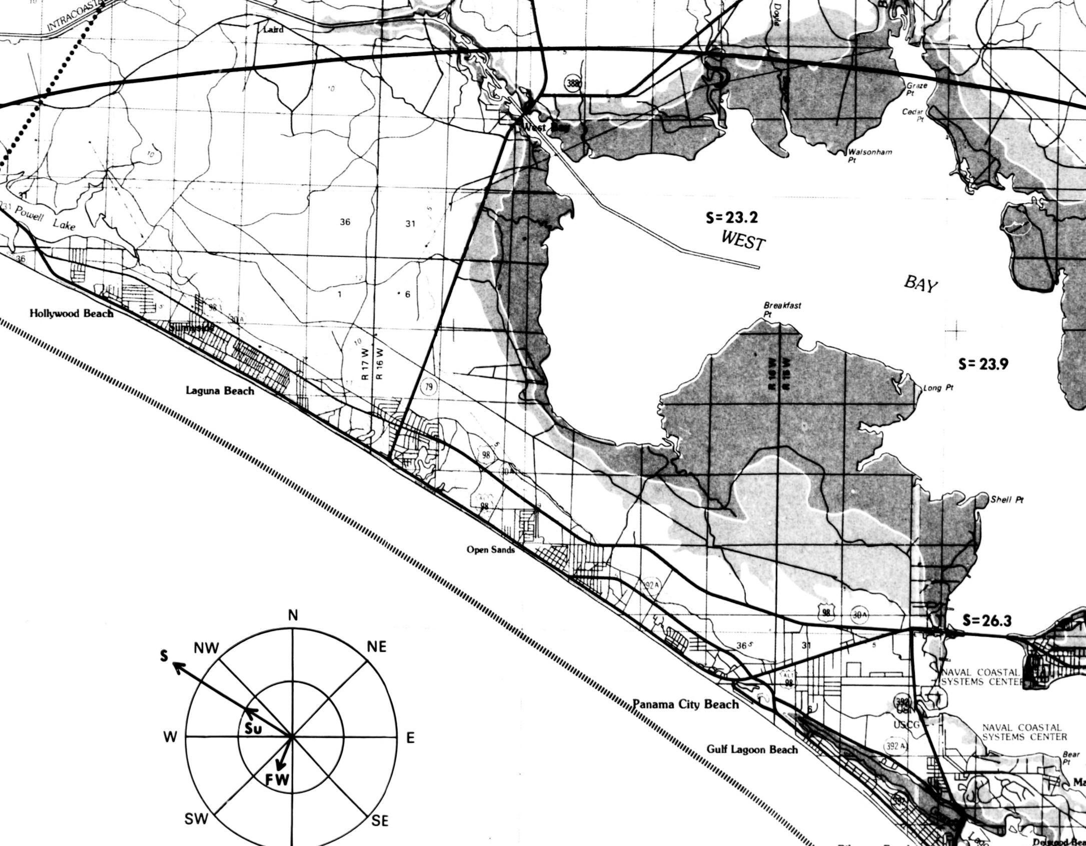
A. BIOLOGICAL RESOURCES
B. SOCIOECONOMIC FEATURES
C. SOILS AND LANDFORMS
D. OIL, GAS AND MINERALS
E. HYDROLOGY AND CLIMATOLOGY

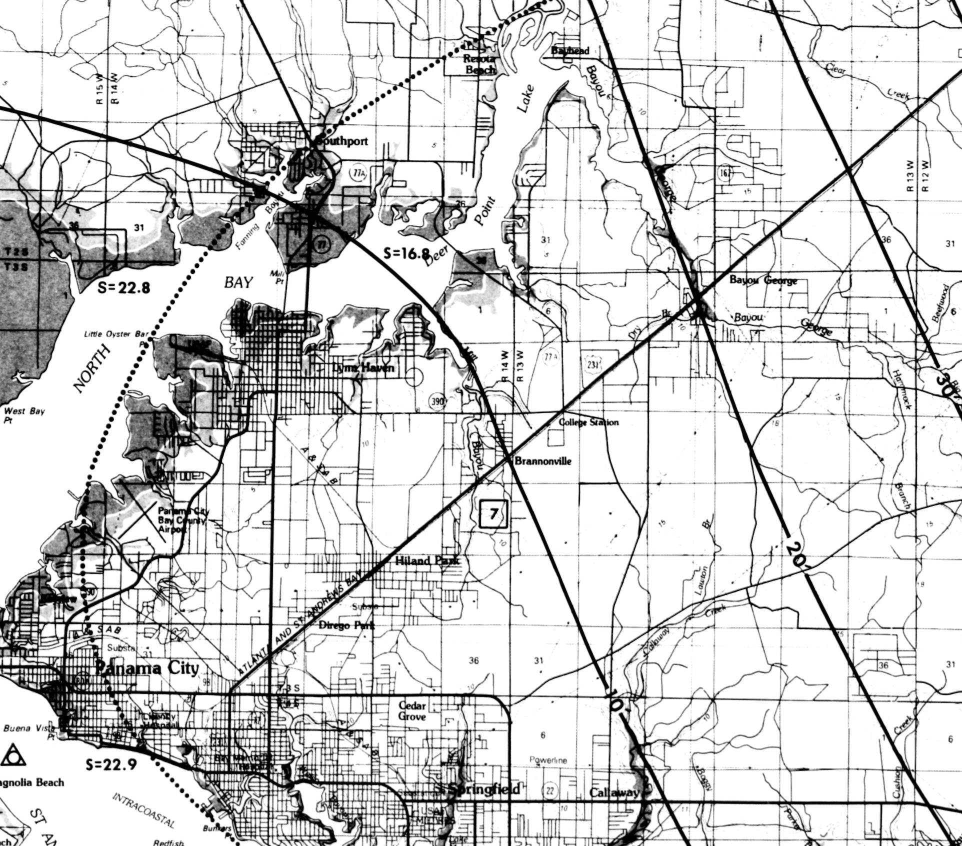
1984

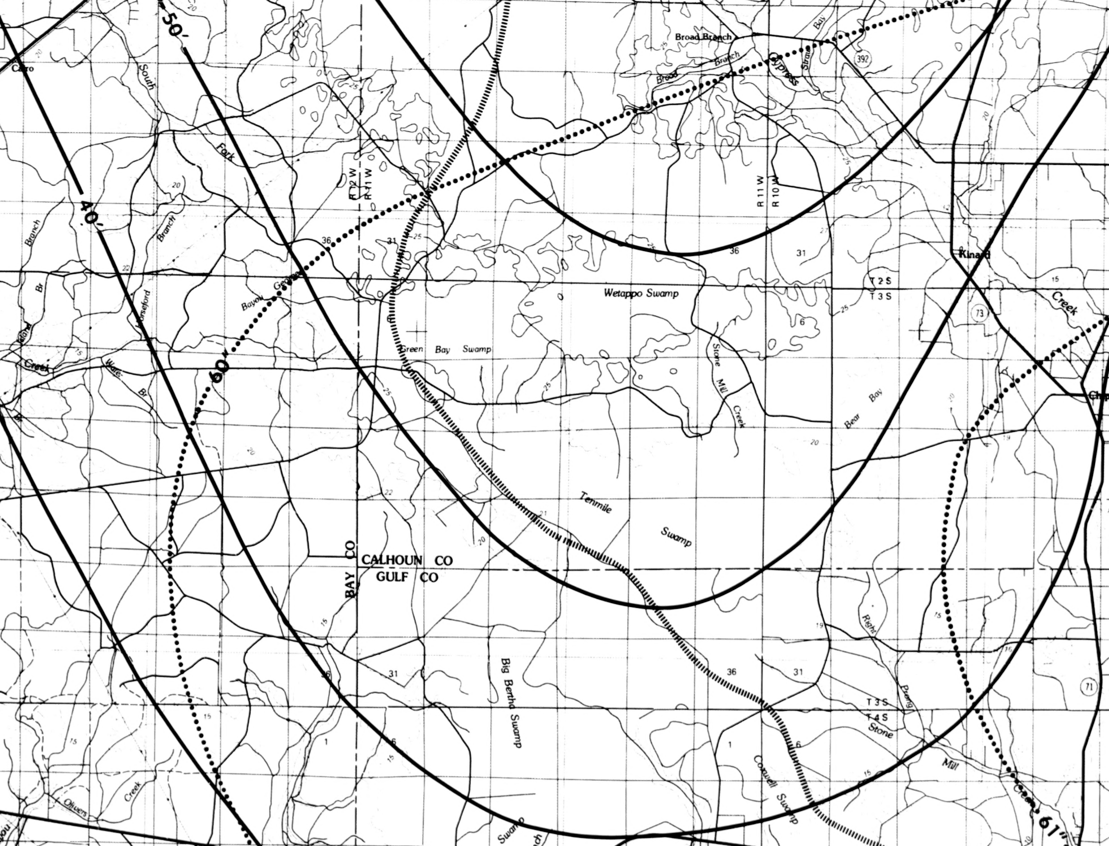
Produced by U.S. Fish and Wildlife
Service and Minerals Management Service

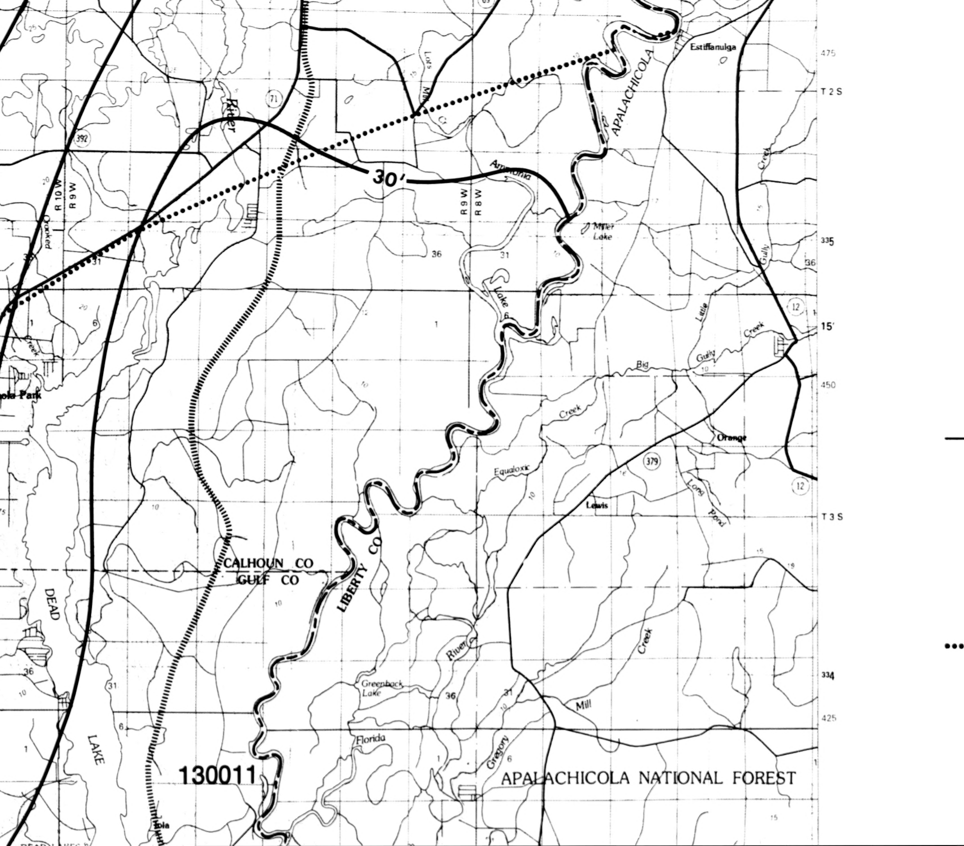
Projection and 10,000 meter grid, zone 17: Universal Transverse Mercator
25,000-foot grid ticks based on Florida coordinate system, west zone

T 3 S
475
335
36
98
15'
450
334
425


INTRACOASTAL
Laird
Powell Lake
West Bay
388
Doyle
Graze Pt
Cedar Pt
Walsonham Pt
S=23.2
WEST
BAY
Breakfast Pt
S=23.9
Long Pt
Shell Pt
S=26.3
R 17 W
R 16 W
R 16 W
R 15 W
36
31
1
6
79
98
30A
ALT 98
392A
392
Hollywood Beach
Sunnyside
Laguna Beach
Open Sands
Panama City Beach
Gulf Lagoon Beach
NAVAL COASTAL SYSTEMS CENTER
NAVAL COASTAL SYSTEMS CENTER
USCG
Bear Pt
N
NE
E
SE
SW
W
NW
S
Su
FW


Resota Beach
Bayhead
Bayou
Lake
Deer
Point
Southport
77A
167
Clear
Creek
R 15 W
R 14 W
R 13 W
R 12 W
Fanning Bayou
77
Mill Pt
S=16.8
T2S
T3S
S=22.8
BAY
NORTH
Little Oyster Bar Pt
West Bay Pt
Lynn Haven
390
R 14 W
R 13 W
77A
231
College Station
Brannonville
Bayou
Bayou George
Dry Br
Bayou George
Beefwood
Hammock
Branch
A & S A B
7
Panama City Bay County Airport
Hiland Park
ATLANTA AND ST ANDREWS BAY
Substa
Dirego Park
S A B
Substa
Panama City
98
T 3 S
T 4 S
Cedar Grove
Buena Vista Pt
agnolia Beach
S=22.9
INTRACOASTAL
ST AN
Bunkers
Redfish
Bay Memorial Hospital
Powerline
Springfield
22
Callaway
Lawton Br
Callaway Creek
Cushion Creek
Boggy
Parker
10
20
30
36
31
1
6


Cairo
South Fork
Branch
Horseford Branch
Bayou George
Ware Br
Creek
50′
40′
60′
61″
Broad Branch
Broad Branch
Cypress Strand
Bay
392
R 12 W
R 11 W
R 11 W
R 10 W
36
31
36
31
6
1
6
Kinard
T 2 S
T 3 S
Creek
73
Wetappo Swamp
Green Bay Swamp
Stone Mill Creek
Bear Bay
Tenmile Swamp
CALHOUN CO
GULF CO
BAY CO
Big Bertha Swamp
Right Prong
T 3 S
T 4 S
Stone Mill Creek
71
Cotwell Swamp
Olivers Creek
Swamp
20
25
22
15
21
19
0



Estiffanulga
APALACHICOLA
T 2 S
475
River
71
392
Lots
Mill
Cr
Ammonia
30′
R 10 W
R 9 W
R 9 W
R 8 W
Crooked
Miller Lake
36
31
335
36
Creek
Gully
Lake
12
15′
Little
Creek
Gully
Big
Creek
450
Orange
379
Equaloxic
Long
Pond
Lewis
12
T 3 S
CALHOUN CO
GULF CO
LIBERTY CO
DEAD
LAKE
River
Greenback Lake
Creek
Mill
334
425
Florida
Gregory
130011
APALACHICOLA NATIONAL FOREST
ola Park
Iola

Produced by U.S. Fish and Wildlife
Service and Minerals Management Service

Projection and 10,000 meter grid, zone 17: Universal Transverse Mercator
25,000-foot grid ticks based on Florida coordinate system, west zone

Overlay material compiled in 1983 from latest available data obtained from Federal, State and Local government agencies and other sources.

-50′—— **POTENTIOMETRIC CONTOURS OF THE FLORIDAN AQUIFER**

The map represents dry season water levels present in tightly cased wells penetrating the Floridan Aquifer during May of 1980. The contour interval is 5 and 10 feet. Contour lines have been generalized to allow for non-simultaneous water level measurement and variable well depth.
Groundwater flow is down-gradient from potentiometric highs and perpendicular to potentiometric contour lines.
(Measured in feet above mean sea level)

•52″•••• **MEAN ANNUAL ISOHYETAL (RAINFALL) CONTOURS**

(1951-1980 National Weather Service Normal Base Period)
The contour interval is 1.0″ (refer to narrative for monthly isohyetal maps and for trend evaluation).

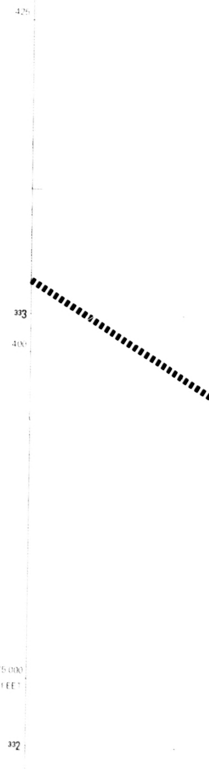
$\boxed{6}$ **NATIONAL WEATHER SERVICE 30-YEAR CLIMATOLOGICAL STATION**

(Number in the box on map refers to station name in supplemental legend'

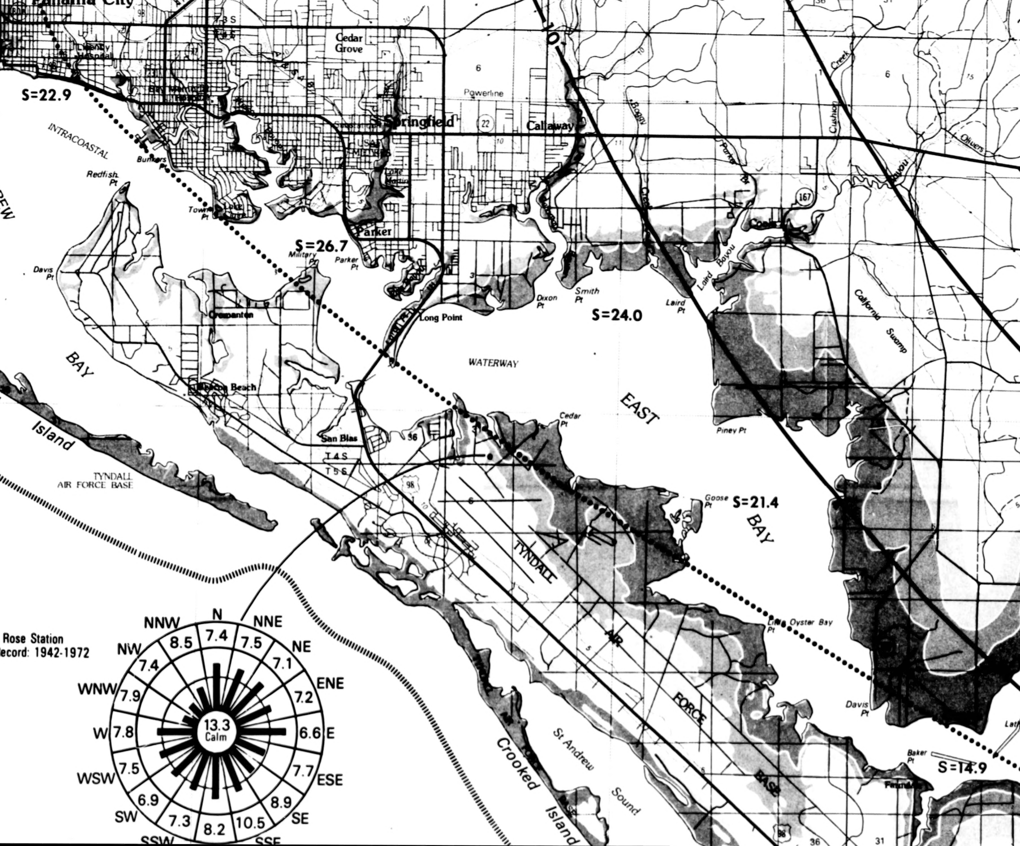
WIND ROSE STATION

N

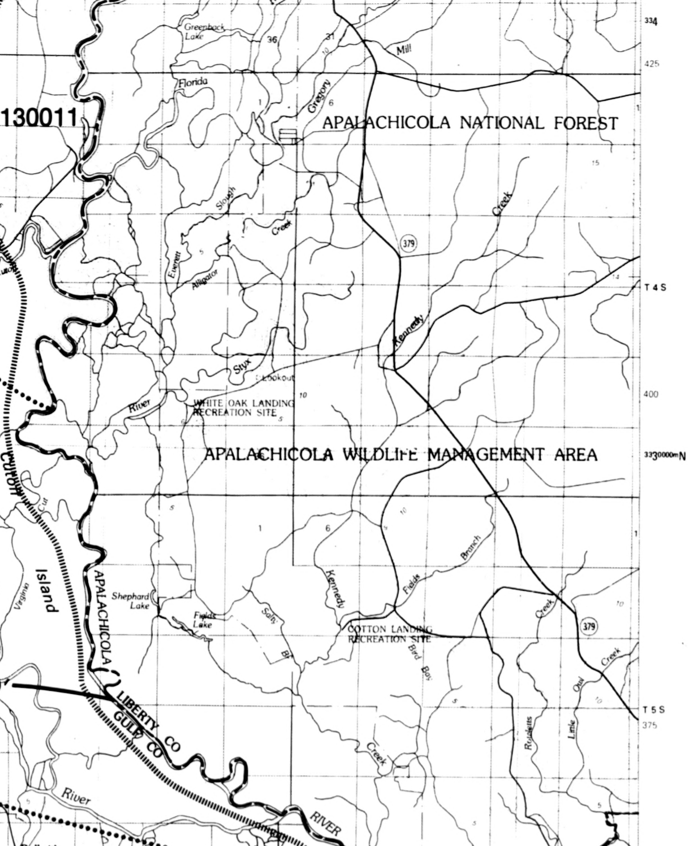
Concentric circles represent 5%


425
333
400
375 000
FEET
332

W
E
SW
SE
S
Su
FW
Panama City Beach
Gulf Lagoon Beach
Biltmore Beach
NAVAL COASTAL SYSTEMS CENTER
NAVAL COASTAL SYSTEMS CENTER
USCG
392
392 A
98
Buena Vista Pt
Bear Pt
Magnolia Beach
Lagoon
Delwood Beach
Alligator Pt
ST ANDREWS
STATE RECREATION AREA
S=32.2
Shell
GULF OF MEXICO
Wind
Period of R


Panama City
S=22.9
INTRACOASTAL
Bunkers Pt
Redfish Pt
Towne Pt
S=26.7
Military Pt
Parker Pt
Parker
Cedar Grove
Powerline
Springfield
Callaway
Boggy
Parker Pt
Laird Bayou
Laird Pt
Smith Pt
Dixon Pt
Long Point
Long Pt
S=24.0
WATERWAY
EAST
BAY
Cedar Pt
Piney Pt
Goose Pt
S=21.4
Cushion Creek
Olivers Bayou
California Swamp
Davis Pt
Oakshore
Beacon Beach
San Blas
T 4 S
T 5 S
BAY
Island
TYNDALL
AIR FORCE BASE
TYNDALL AIR FORCE BASE
Little Oyster Bay
Davis Pt
Baker Pt
S=14.9
St Andrew Sound
Crooked Island
Rose Station
Record: 1942-1972
N
NNE
NE
ENE
E
ESE
SE
SSE
SSW
SW
WSW
W
WNW
NW
NNW
7.4
7.5
7.1
7.2
6.6
7.7
8.9
10.5
8.2
7.3
6.9
7.5
7.8
7.9
7.4
8.5
13.3
Calm

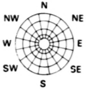
140101
130012
130011
20
Big Bertha Swamp
Wildcat Swamp
Branch
Britt
Bill Swamp
Coxwell Swamp
Sandy Br
Stone Mill Creek
Prong
T 3 S
T 4 S
T 5 S
LAKE
Iola
DEAD LAKES STATE RECREATION AREA
Chipola
Lake Grove
Wewahitchka
Martin Islands
Lake Shippey
Lake Coma
Honeyville
Gaskins Still
Creek
Mule Creek
Alligator
Sandy
Eagle
Wetappo Bay
Bull Pt
Bull Bayou
Drop Pt
Wetappo Creek
Little Cr
Wilburn Br
Swamp
Sykes Ford
Cesar Swamp
BAY CO
GULF CO
22
71
386
381
386
61


Greenback Lake
36
31
Mill
Florida
Gregory
130011
APALACHICOLA NATIONAL FOREST
15
Slough
Creek
Creek
Styx
Everett
Alligator
379
T 4 S
14
Kennedy
Styx
Lookout
River
WHITE OAK LANDING RECREATION SITE
10
400
APALACHICOLA WILDLIFE MANAGEMENT AREA
3330000mN
Cut
Island
Virginia
APALACHICOLA
Shephard Lake
Fields Lake
Kennedy
Fields
Branch
COTTON LANDING RECREATION SITE
Bird
Creek
379
Creek
Owl
Roulettes
Little
T 5 S
375
LIBERTY CO
GULF CO
Creek
River
RIVER
334
425

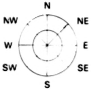
(1951-1980 National Weather Service Normal Base Period)
The contour interval is 1.0" (refer to narrative for monthly isohyetal maps and for trend evaluation).

6

NATIONAL WEATHER SERVICE 30-YEAR CLIMATOLOGICAL STATION
(Number in the box on map refers to station name in supplemental legend'


N
NE
E
SE
S
SW
W
NW

WIND ROSE STATION
Concentric circles represent 5% frequency interval. The average wind speed (mph) is listed in the outer quadrant of each vector direction (Wind rose data represents wind data that has been summarized by the National Climatic Center for Airports, Naval Air Stations and NWS Offices)


N
NE
E
SE
S
SW
W
NW

OFFSHORE SURFACE CURRENT ROSE
Resultant vectors for each season are shown. The magnitude of each vector is proportional to the velocity. (Concentric circles represent 3 centimeters/second currents)
Vectors defined by the New England Coastal Engineers Computer Model G.A.L.

S	Spring
Su	Summer
FW	Fall/Winter

HURRICANE INUNDATION ZONES
(Maximum areas subject to flooding by Storm Category, as defined by National Weather Service Computer Models)

■ Category #1 Storm (74-95 mph winds; probability of occurence 1:10 years)

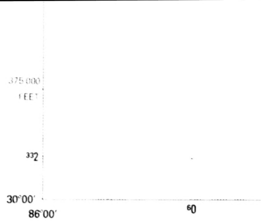
■ Category #2 Storm (96-110 mph winds; probability of occurence 1:27 years)

▨ Category #3 Storm (111-130 mph winds; probability of occurence 1:42 years)

□ Category #4 Storm (131-155 mph winds; probability of occurence no historical record)

□ Category #5 Storm (> 155 mph winds; probability of occurence no historical record)

(Hurricane inundation zones on this map represent generalized areas of maximum areal storm surge flooding by storm category. The scale and detail of this map are meant for planning purposes only. This map is unsuitable for determining the vulnerability of individual buildings to storm surge)

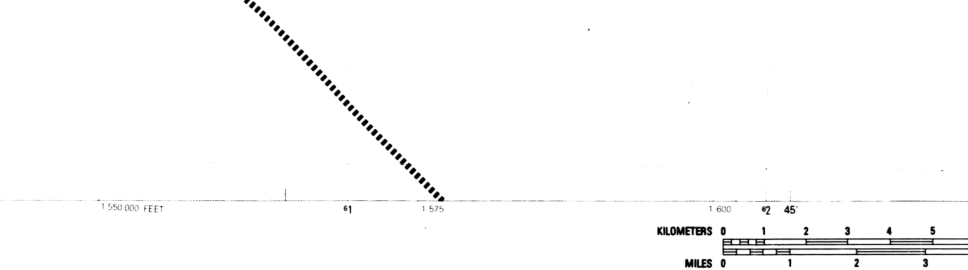

375 000
FEET
332
30°00'
86°00'
60

THE FLORIDA ECOLOGICAL ATLAS WAS PRODU
SERVICE, DIVISION OF BIOLOGICAL SERVICES,
TEAM (FWS OBS - 82 47) AND THE MINERALS
PLANNERS, DECISION MAKERS, AND THE GENE
EVALUATE CHANGE AND TO RESOLVE CONFLIC
WILDLIFE REQUIREMENTS, AND THE MAINTENA
THE STUDY AREA INCLUDES THE COASTAL COU
OKALOOSA, WALTON, WASHINGTON, BAY, CAL
JEFFERSON, TAYLOR, DIXIE, LEVY, CITRUS AND
OFFSHORE APPROXIMATELY 10 MILES. THERE
OR PRODUCTS OF THIS STUDY, TO DEFINE THE
JURISDICTION OF ANY FEDERAL, STATE, OR LO
THE GEOGRAPHICAL SCOPE OF THE REGULATO
AGENCIES.

THIS MAP HAS BEEN COMPILED FROM A VARIE
INCLUDING MAPS, AERIAL PHOTOS, AND REPO
CONTAINED GENERALIZED LOCATIONS OF RESO
FEATURES, THE USER SHOULD NOT RELY ON TH
MEASUREMENTS OF DISTANCES OR AREAS.

Selected areas on this U.S.G.S. base map
extracted from aerial photography. This in

MICROCOPY RESOLUTION TEST CHART
NBS - 1010a
(ANSI and ISO TEST CHART No. 2)
1.0
1.1
1.25
2.8
3.2
3.6
4.0
4.5
5.0
2.5
2.2


1 550 000 FEET
61
1 575
1 600
62
45′
KILOMETERS 0
1
2
3
4
5
MILES 0
1
2
3

CED BY THE U.S. FISH AND WILDLIFE
NATIONAL COASTAL ECOSYSTEMS
MANAGEMENT SERVICE FOR COASTAL
RAL PUBLIC, TO DETERMINE AND
TS AMONG LAND USES, FISH AND
ANCE OF ECOLOGICAL DIVERSITY.
UNTIES: ESCAMBIA, SANTA ROSA,
LHOUN, GULF, FRANKLIN, WAKULLA,
HERNANDO, AND EXTENDS
S NO ATTEMPT, IN THE DESIGN
LIMITS OF PROPRIETARY
CAL GOVERNMENT TO ESTABLISH
ORY PROGRAMS OF GOVERNMENT

TY OF SOURCE MATERIALS
RTS. SINCE MANY SOURCES
OURCES AND OTHER MAPPED
HESE MAPS FOR PRECISE

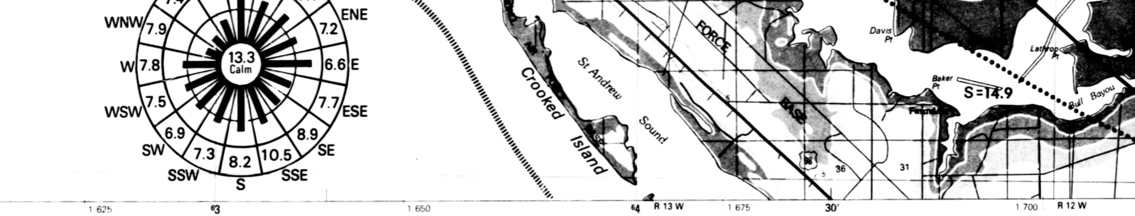
updated using information
nformation not field checked.

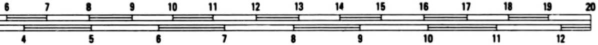
PRIMARY SOURCES OF MAPPED INFORMATION:

HYDROLOGY: Potentiometric Surface of the Floridan Aquifer, Northwest Florida Water Management District, Tallahassee, Florida, 1980.
Potentiometric Surface of the Floridan Aquifer, Suwanee River Water Management District, Live Oak, Florida, 1980.
Potentiometric Surface of the Floridan Aquifer, Southwest Florida Water Management District, Brooksville, Florida, 1981.
Sea, Lake, and Overland Surges from Hurricanes (SLOSH) Model, National Oceanic and Atmospheric Administration, Silver Spring, Maryland, 1981.
Water Resources Data for Florida, U.S. Geological Survey, Tallahassee, Florida, 1979, 1980.
Water Quality Inventory for the State of Florida, Dept. of Environmental Regulation, Tallahassee, Florida, 1982.
Current Atlas of the West Florida Shelf, New England Coastal Engineers, Bangor, Maine. 1982.

CLIMATOLOGY: National Climatic Center, Asheville, North Carolina. 1981.

FOR COMPLETE REFERENCES SEE MAP NARRATIVE

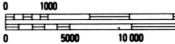

WNW
7.9
W
7.8
WSW
7.5
SW
6.9
7.3
SSW
8.2
S
10.5
SSE
8.9
SE
7.7
ESE
6.6
E
7.2
ENE
13.3
Calm
Crooked Island
St Andrew Sound
FORCE
BASE
Davis Pt
Lathrop Pt
Baker Pt
S=14.9
Bull Bayou
98
36
31
1 625
63
1 650
64
R 13 W
1 675
30′
1 700
R 12 W


6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
4
5
6
7
8
9
10
11
12

SCALE 1:100 000

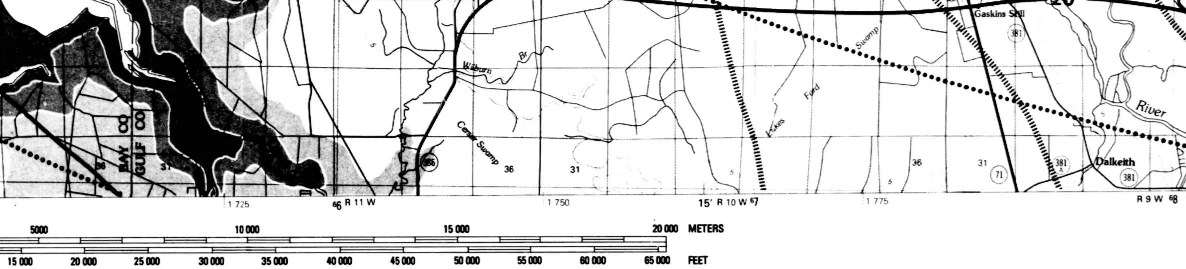
1 CENTIMETER ON THE MAP REPRESENTS 1 KILOMETER ON THE GROUND

CONTOUR INTERVAL 5 METERS


0
1000
0
5000
10 000

CLIMATOLOGICAL STATION NAMES

1. Pensacola FAA Airport
2. Milton Experimental Station
3. Crestview FAA Airport
4. De Funiak Springs
5. Niceville
6. Chipley 3 E
7. Panama City NE
8. Blountstown
9. Apalachicola Airport
10. St. Marks 5 SSE
11. Monticello 3 W
12. Cross City 2 WNW
13. Inverness
14. Brooksville Chinsegut Hill


Gaskins Still
381
Swamp
Br
Wilburn
Ford
River
Kikes
Cesar Swamp
BAY CO
GULF CO
36
31
386
36
31
5
36
31
71
381
Dalkeith
381
1 725
66 R 11 W
1 750
15′ R 10 W 67
1 775
R 9 W 68
5000
10 000
15 000
20 000 METERS
15 000
20 000
25 000
30 000
35 000
40 000
45 000
50 000
55 000
60 000
65 000 FEET

▮▮▮▮▮ **U.S. GEOLOGICAL SURVEY HYDROLOGIC UNIT BOUNDARIES (Cont'd)**

- Coastal Area between Ochlockonee and Apalachicola Rivers (130013)
- Ochlockonee River Basin (120003)
- St. Marks and Wakulla Rivers and Coastal Area between Aucilla and Ochlockonee Rivers (120001)
- Aucilla River Basin (110103)
- Coastal Area between Suwannee and Aucilla Rivers (110102)
- Suwannee River Basin below Withlacoochee River excluding Santa Fe River Basin (110205)
- Waccasassa River and Coastal Area between Withlacoochee and Suwannee Rivers (110101)
- Oklawaha River Basin (080102)
- Withlacoochee River Basin (100208)
- Coastal Area from Tampa Bay to Withlacoochee River (100207)

▲ Q = ___ cfs
R = ___ in/yr

U.S. GEOLOGICAL SURVEY STREAM GAGING STATION

Mean Annual Discharge (cubic feet/second) = Q
Mean Annual Runoff (inches/year) = R

△ SC = ___ mmhos
Q = ___ cfs
R = ___ in/yr

U.S. GEOLOGICAL SURVEY STREAM GAGE AND SURFACE WATER QUALITY STATION

Mean Annual Surface Water Specific Conductivity (micromhos) = SC
Mean Annual Discharge (cubic feet/second) = Q
Mean Annual Runoff (inches/year) = R

△

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION FIXED SURFACE WATER STATION

(Insufficient period of record to establish a long term mean)

○ SC = ___ mmhos
Cl = ___ mg/l

U.S. GEOLOGICAL SURVEY GROUND WATER OBSERVATION AND WATER QUALITY WELL

Mean Annual Ground Water Specific Conductivity (micromhos) = SC
Dissolved Chloride (milligrams/liter) = Cl

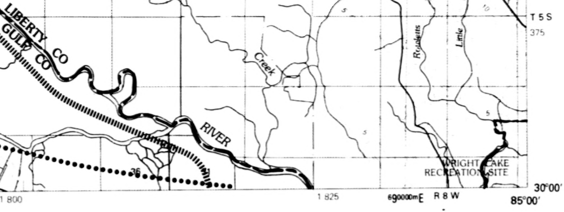
S = ___ ppt

MEAN ANNUAL COASTAL SALINITY

(parts per thousand) = S

STUDY AREA BOUNDARY

▮▮▮▮▮▮▮▮▮▮ Offshore
— — — Inland (County)
—— - - —— Inland (State)

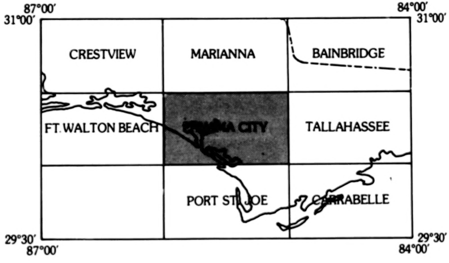

LIBERTY CO
GULF CO
Creek
RIVER
Robbetts
Little
T 5 S
375
36
WRIGHT LAKE
RECREATION SITE
30°00'
85°00'
1 800
1 825
690000m E
R 8 W

☐ Category #5 Storm (> 155 mph winds; probability of occurence no historical record)

(Hurricane inundation zones on this map represent generalized areas of maximum areal storm surge flooding by storm category. The scale and detail of this map are meant for planning purposes only. This map is unsuitable for determining the vulnerability of individual buildings to storm surge)

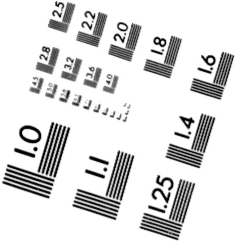
U.S. GEOLOGICAL SURVEY HYDROLOGIC UNIT BOUNDARIES

Perdido River Basin (14106)
Perdido Bay, Inflow and Coastal Area (140107)
Lower Conecuh River Basin (140304)
Escambia River Basin (140305)
Blackwater River Basin (140104)
Escambia Bay, Inflow and Coastal Area (140105)
Yellow River Basin (140103)
Choctawhatchee Bay, Inflow and Coastal Area (140102)
Pea River Basin (140202)
Choctawatchee River below Pea River (140203)
St. Andrews Bay, Inflow and Coastal Area (140101)
Chipola River Basin (130012)
Apalachicola River Basin (130011)
Apalachicola Bay Coastal Area and Offshore Islands (130014)


87°00'
31°00'
84°00'
31°00'
CRESTVIEW
MARIANNA
BAINBRIDGE
FT. WALTON BEACH
PANAMA CITY
TALLAHASSEE
PORT ST. JOE
CARRABELLE
29°30'
87°00'
29°30'
84°00'

MICROFILMED FROM
BEST AVAILABLE COPY

MICROCOPY RESOLUTION TEST CHART
NBS 1010a
(ANSI and ISO TEST CHART No. 2)


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0